**Nocturnal hypoglycemia was revealed by continuous glucose monitoring (CGM) in non-diabetic patients with advanced movement disorders under enteral nutrition.**

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**Abstract**

【Background】Continuous glucose monitoring (CGM), a method to know real-time plasma glucose dynamics, is widely utilized in patients with diabetes mellitus, but its experience is scarce in non-diabetic patients, especially with advanced movement disorders. 

【Objective】To evaluate glucose profiles of patients with advanced movement disorders under enteral nutrition. 

【Patients and Methods】We included eight bedridden patients with movement disorders (number: PD = 4, MSA = 2, PSP = 1, DRPLA = 1) under enteral nutrition by gastrostomy or nasogastric tube three times per day. None of them was with diabetes mellitus, mechanical ventilation, hypoglycemic agents, or significant diseases which could affect glucose dynamics. Along with evaluation of the nutritional status, 72 h CGM was performed. 

【Results】Seven (87.5%) of the eight included patients had hypoglycemia (<70 mg/dl) in nighttime, independent of calories per actual body weight and serum markers. The hypoglycemic events were associated by plasma glucose fluctuations and/or postprandial hyperglycemia (>140 mg/dl). Routine blood testing had never revealed hypoglycemia in four of the seven. Three of the seven were re-examined by CGM with higher calories, resulting in persistent hypoglycemia with worsened hyperglycemia in two, and disappearance of hypoglycemia with remarkable increase of body weight in one. 

【Conclusions】Nocturnal hypoglycemia in advanced movement disorders can be revealed only by CGM and could be refractory to nutritional adjustment. In advanced movement disorders, clinicians should care of nocturnal hypoglycemia, even if they are under enteral nutrition.

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**CGM in movement disorder**

- Hyperglycemia in stroke
- Nocturnal hypoglycemia in insulinoma with neurologic signs
- Postprandial hyperglycemia in handicapped children

Not in neurodegenerative / movement disorders

→ CGM in movement disorders under enteral nutrition (≠ not fasting) is unprecedented.

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**Results**

- Seven (87.5%) experienced nocturnal hypoglycemia 
  - prevalence seems higher than controls (41%) 
  - in re-examination of three, hypoglycemia was refractory in two, and disappeared in one but lead to unpermissive weight gain (3.9kg/month) 
- Coexisting postprandial hyperglycemia and glucose fluctuation was observed (Fig.1)
- Overlooking of hypoglycemia in conventional methods 
  -in four (57%) of the seven 
  -especially spot blood glucose exam totally failed to reveal hypoglycemia in this test (Fig.2)

**Conclusions**

- This is the first study to reveal nocturnal hypoglycemia in advanced movement disorders by CGM despite getting enteral nutrition.
- Hypoglycemia might be overlooked by conventional methods and possibly refractory.

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**References**